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EXAMINER	
BAND, MICHAEL A	

ART UNIT	PAPER NUMBER
1753	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/803,805	MOSDEN, AELAN	
	Examiner	Art Unit	
	Michael Band	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) _____ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/18/2004; 3/3/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Claim 28 recites the limitation "the etching module" in lines 5, 10, 14, and 15. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, 8-10, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ficnh (US Patent No. 5,085,410).

With respect to claim 1, Ficnh '410 discloses a modular processing system having a vacuum environment (abstract). Figure 1 depicts a processing module where the invention provides a method and apparatus for replacing internal components of each modular chamber without system stripdown (col. 1, lines 67-68; col. 2, line 1).

Since the invention provides for internal components (i.e. maintenance items) to be replaced, it is inherent that they are configured to be removably mounted upon some mounting structure. Each modular unit (figure 2, part 12) is provided with two transfer casks (i.e. transfer systems) (figure 2, part 130) which permit the assemblies (i.e. maintenance items) (figure 2, parts 30 and 40) to be removed through the valved module vacuum locks (figure 2, parts 126-129) without loss of vacuum in the module (col. 2, lines 21-29) or processing lines (col. 2, lines 17-22). Ficnh '410 further discloses that probes (i.e. arms) (figure 2, parts 120 and 122) serve as transfer mechanisms from the modular chamber through valved vacuum locks and into transfer casks (col. 2, lines 29-35).

With respect to claim 2, Ficnh '410 further discloses an isolation assembly comprising valved vacuum locks (i.e. gate valve assembly) (figure 2, parts 126-129) between the transfer cask (i.e. transfer system) (figure 2, part 130) and modular chamber (i.e. processing module) (part 12) (col. 2, lines 28-34).

With respect to claim 8, Ficnh '410 further discloses a transfer cask (i.e. transfer system) with an arm (i.e. transfer plate) (parts 120 and 122) for moving the extractor or vaporizer assemblies (parts 40 or 30) from one position (i.e. modular chamber) to another position (i.e. transfer cask) (col. 2, lines 28-34).

With respect to claim 9, Ficnh '410 further depicts in figure 2 a vaporizer assembly (part 30) that has a shield (part 26) and an electrical ground plate with the associated cooling and electrical services (i.e. insulators) (abstract). The extractor

assemblies (parts 40A and 40B) have plates (figure 2, parts 42 and 43; col. 9, lines 18-23).

With respect to claim 10, Ficnh '410 further depicts in figure 2 a controller (part 135) coupled to a module (part 12) and transfer cask (part 130). Ficnh '410 also discusses how the controller controls the arms to remove the extractor assembly (i.e. maintenance item) while "maintain[ing] a vacuum seal between the casks 130 and chamber interiors 18" (col. 6, lines 62-68; col. 7, lines 1-39). Ficnh '410 also notes that both extractor and vaporizer assemblies have transfer casks (col. 2, lines 21-25), thus the method for removing a vaporizer assembly is similar to the method for an extractor assembly.

With respect to claim 13, Ficnh '410 further discloses that the arms (i.e. probes) (parts 120 and 122) support (i.e. mount) the assemblies and are configured to move from the modular chamber to transfer cask (col. 2, lines 21-35).

6. Claims 3-5, 7, 11-12, and 17-29 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ficnh (US Patent No. 5,085,410).

With respect to claim 3, Ficnh '410 further discloses transferring an extractor or vaporizer assemblies (i.e. maintenance item) from a process module to transfer cask without loss of vacuum for equipment maintenance (abstract; col. 2, lines 17-28). It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) to a maintenance system. Since the assemblies are stored in the

maintenance system for repair, the maintenance system is a storage assembly and therefore is inside the maintenance system. Figure 2 depicts extractor or vaporizer assemblies (i.e. first and second maintenance item) (parts 30 and 40) removed via an exchange system (parts 126-129). It is also either inherent or obvious to use an exchange system of similar design to figure 2 to transfer the maintenance item from the transfer cask to a maintenance system to limit the loss of vacuum.

With respect to claim 4, Ficnh '410 further discloses an isolation assembly comprising valved vacuum locks (i.e. gate valve assembly) between the transfer cask (i.e. transfer system) and modular chamber (i.e. processing module) that contain the vacuum for when equipment components need maintenance (abstract; col. 2, lines 28-34, figure 2, parts 126-29). It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) to a maintenance system. It is also either inherent or obvious to use an exchange system of similar design to figure 2 to transfer the maintenance item from the transfer cask to a maintenance system and vice versa.

With respect to claim 5, Ficnh '410 further depicts in figure 2 an exchange system comprising valved locks (parts 126-129) and arms (parts 120 and 122) to facilitate removal of assemblies for equipment maintenance (abstract). A controller (part 135) controls hydraulic cylinders (parts 42, 144, 150, and 152), which in turn drive respective arms (parts 120 and 122) (col. 9, lines 18-23; col. 7, lines 25-28), thus a drive system is used. An end effector (part 180) is also seen in figure 2 which is coupled to a

transfer arm (part 120). Ficnh '410 states that the arms are capable of movement in both a horizontal direction and vertical direction (col. 7, lines 21-25). It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) from a process module to a maintenance system and vice versa.

With respect to claim 7, Ficnh '410 further depicts in figure 2 an exchange system comprising valved locks (parts 126-129) and arms (parts 120 and 122) to facilitate removal of assemblies for equipment maintenance (abstract). A controller (part 135) controls hydraulic cylinders (parts 42, 144, 150, and 152), which in turn drive respective arms (parts 120 and 122) (col. 9, lines 18-23; col. 7, lines 25-28), thus a drive system is used. An end effector (part 180) is also seen in figure 2 which is coupled to a transfer arm (part 120). Ficnh '410 states that the arms are capable of movement in both a horizontal direction and vertical direction (col. 7, lines 21-25). Ficnh '410 further discusses transferring an extractor or vaporizer assemblies (i.e. maintenance item) from a process module to transfer cask without loss of vacuum for equipment maintenance (abstract; col. 2, lines 17-28). It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) from a process module to a maintenance system and vice versa. Since the assemblies are stored in the maintenance system for repair, the maintenance system is a storage assembly and therefore is inside the maintenance system.

With respect to claims 11 and 12, Ficnh '410 further discloses a cylindrical plate (part 43) (i.e. maintenance item) from extractor (i.e. substrate) assemblies (col. 8, lines 6-20; abstract). The vaporizer unit consists of a thermal/vapor shield (part 26) and an electrical ground plate along with associated cooling and electrical services (i.e. insulators). Figure 2 depicts cylindrical plate (part 43) mounted in chamber (part 18) in an area that is prone to laser radiation by laser paths (part 15) (col. 4, lines 16-17). Since the cylindrical plate is part of the assembly, arms (parts 120 and 122) remove (i.e. lift) the assembly from the module to a transfer cask (col. 6, lines 62-68; col. 7, lines 1-39; col. 8, lines 6-11). Ficnh '410 also describes how the invention is used in the fabrication of electronic components and circuits (i.e. semiconductors) (col. 1, lines 15-18). It is either inherent or obvious that the substrate assembly comprises a wafer that is either processed via etching or deposition as evidenced by Mooring et al (US Patent No. 6,267,545; col. 1, lines 26-36).

With respect to claim 17, Ficnh '410 further discloses a vaporizer assembly (i.e. thermal processing module) (abstract). Since Ficnh '410 also discusses how the process is used for the fabrication of electronic components and circuits, it is either inherent or obvious that a deposition (i.e. coating) module or an etching (i.e. patterning) module is present as evidenced by Mooring et al (US Patent No. 6,267,545; col. 1, lines 26-36).

With respect to claim 18, Ficnh '410 discloses a modular processing system having a vacuum environment (abstract). Figure 1 depicts a processing module where the invention provides a method and apparatus for replacing internal components of

each modular chamber without system stripdown (col. 1, lines 67-68; col. 2, line 1). Since the invention provides for internal components (i.e. maintenance items) to be replaced, it is inherent that they are configured to be removably mounted upon some mounting structure. Each modular unit is provided with two transfer casks (i.e. transfer systems) which permit the extractor (i.e. substrate) assembly (i.e. maintenance items) to be removed through the valved module vacuum locks without loss of vacuum in the module (abstract; col. 2, lines 21-29) or processing lines (col. 2, lines 17-22). Ficnh '410 further discloses that probes (i.e. arms) serve as transfer mechanisms from the modular chamber through valved vacuum locks and into transfer casks (col. 2, lines 29-35). Since Ficnh '410 also discusses how the process is used for the fabrication of electronic components and circuits, it is either inherent or obvious that the substrate assemblies discussed are wafer assemblies as evidenced by Mooring et al (US Patent No. 6,267,545; col. 1, lines 26-36).

With respect to claim 19, Ficnh '410 further discloses a cylindrical plate (part 43) (i.e. maintenance item) from extractor (i.e. substrate) assemblies (col. 8, lines 6-20; abstract). The vaporizer unit consists of a thermal/vapor shield (part 26) and an electrical ground plate along with associated cooling and electrical services (i.e. insulators). Figure 2 depicts cylindrical plate (part 43) mounted in chamber (part 18) in an area that is prone to laser radiation by laser paths (part 15) (col. 4, lines 16-17). Since the cylindrical plate is part of the assembly, arms (parts 120 and 122) remove (i.e. lift) the assembly from the module to a transfer cask (col. 6, lines 62-68; col. 7, lines 1-39; col. 8, lines 6-11). Ficnh '410 also describes how the invention is used in the

fabrication of electronic components and circuits (i.e. semiconductors) (col. 1, lines 15-18). It is either inherent or obvious that the substrate assembly comprises a wafer that is either processed via etching or deposition as evidenced by Mooring et al (US Patent No. 6,267,545; col. 1, lines 26-36).

With respect to claim 20, Ficnh '410 further discloses a transfer cask for a new extractor assembly (i.e. second maintenance item) to be placed into the process module without exposure to an outside environment, with the extractor assembly removably mounted in the module chamber (col. 2, lines 21-28 and 48-60). It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) to a maintenance system and vice versa.

With respect to claim 21, Ficnh '410 further discloses a transfer cask (i.e. transfer system) with an arm (i.e. transfer plate) (parts 120 and 122) for moving the extractor or vaporizer assemblies (i.e. first maintenance item) (parts 40 or 30) from one position (i.e. modular chamber) to another position (i.e. transfer cask) (col. 2, lines 28-34).

With respect to claim 22, Ficnh '410 further discloses another transfer cask (i.e. transfer system) with an arm (i.e. transfer plate) (parts 120 and 122) for moving the new extractor or vaporizer assemblies (i.e. second maintenance item) (parts 40A, 40B, and 30) from a second position (i.e. transfer cask) to a first position (i.e. process module) (col. 2, lines 28-34 and 48-60).

With respect to claim 23, Ficnh '410 further discloses transferring an extractor or vaporizer assemblies (i.e. maintenance item) from a process module to a transfer cask

without loss of vacuum for equipment maintenance (abstract; col. 2, lines 17-28). It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) to a maintenance system and vice versa. Since the assemblies are stored in the maintenance system for repair, the maintenance system is a storage assembly and therefore is inside the maintenance system.

With respect to claim 24, Ficnh '410 further discloses substrate (i.e. extractor) assemblies which are transferred from a process module to a transfer cask (i.e. transfer system) via extensible probes (i.e. arms parts 120 and 22) without loss of vacuum (abstract; col. 2, lines 21-35).

With respect to claims 25 and 26, Ficnh '410 further discloses a transfer cask (i.e. transfer system) with an arm (i.e. transfer plate) (parts 120 and 122) for moving the extractor or vaporizer assemblies (i.e. first maintenance item) (parts 40 or 30) from a modular chamber to a transfer cask without loss of vacuum (col. 2, lines 28-34). Ficnh '410 also discloses that another transfer cask moves a new (i.e. second maintenance item) extractor or vaporizer assemblies into a chamber module (col. 2, lines 48-60). It is either inherent or obvious that some method of monitoring is used to determine when to replace the extractor or vaporizer assemblies for maintenance (i.e. a processing recipe). Furthermore since Ficnh '410 also describes how the invention is used in the fabrication of electronic components and circuits (i.e. semiconductors) (col. 1, lines 15-18), it is also either inherent or obvious that the substrate assembly comprises a wafer that is either

processed via etching or deposition as evidenced by Mooring et al (US Patent No. 6,267,545; col. 1, lines 26-36).

With respect to claim 27, Ficnh '410 further depicts in figure 2 an extractor or vaporizer assemblies (i.e. first maintenance item) (parts 30 or 40) removably mounted to a first exchange system (parts 127-129). The exchange system is coupled to a transfer cask (part 130) and process module (part 12).

With respect to claim 28, Ficnh '410 further depicts in figure 2 an extractor or vaporizer assemblies (i.e. first and second maintenance items) (parts 30 and 40) removably mounted to a first exchange system (parts 126-129) and another (i.e. second) exchange system (parts 126-129). Thus the first exchange system is in a first position and the second exchange system is in a second position. The extractor (or vaporizer) assembly is mounted on extensible probes (i.e. arms, figure 2, parts 120 and 122) which transports the assembly from a process module to a transfer cask and vice versa (col. 2, lines 17-35). It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) to a maintenance system and vice versa. Figure 2 depicts the second exchange system for transferring the maintenance item to the transfer cask while maintaining no loss of vacuum (col. 2, lines 17-28). It is also either inherent or obvious to use an exchange system of similar design to figure 2 to transfer the maintenance item from the transfer cask to a maintenance system to limit the loss of vacuum. Depicted in figure 2, the second maintenance item (part 30 or 40) is transferred from the transfer system (part 130) to the process module (part 12) via a first

exchange system (parts 126-129) without a loss of vacuum to the process module (col. 2, lines 22-28). Since Ficnh '410 also describes how the invention is used in the fabrication of electronic components and circuits (i.e. semiconductors) (col. 1, lines 15-18), it is either inherent or obvious that the electron beam guns of the vaporizer assembly either etches or deposits onto the substrate assembly as evidenced by Mooring et al (US Patent No. 6,267,545; col. 1, lines 26-36).

With respect to claim 29, Ficnh '410 further discloses an isolation assembly comprising valved vacuum locks (i.e. gate valve assembly) between the transfer cask (i.e. transfer system) and modular chamber (i.e. processing module) (col. 2, lines 28-34). Extractor or vaporizer assemblies (i.e. first maintenance item) (part 30 or 40) are removably mounted to an exchange system (parts 126-129) using the isolation assembly. It is inherent or obvious that since the function of a transfer cask is to replace equipment in need of maintenance (abstract) that the transfer cask transfers the maintenance item (i.e. assemblies) to a maintenance system and vice versa. Figure 2 depicts the second exchange system for transferring the maintenance item to the transfer cask while maintaining no loss of vacuum (col. 2, lines 17-28). It is also either inherent or obvious to use an exchange system and isolation assembly of similar design to figure 2 to transfer the maintenance item from the transfer cask to a maintenance system to limit the loss of vacuum while the converse is true. Ficnh '410 further discloses that arms (parts 120 and 122) are free to rotate horizontally and vertically about respective pivots (parts 132 and 134) and are attached to a transfer cask (col. 7, lines 19-25) and a first maintenance item (part 30 or 40) inside a process module (figure

2). Ficnh '410 also discusses another transfer cask (i.e. transfer system) with an arm (i.e. transfer plate) (parts 120 and 122) for moving the new extractor or vaporizer assemblies (i.e. second maintenance item) (part 30 or 40) from a second position (i.e. transfer cask) to a first position (i.e. process module) (col. 2, lines 28-34 and 48-60).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 6 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ficnh (US Patent No. 5,085,410) as applied to claims 3 and 13 above, and further in view of Mooring et al (US Patent No. 6,267,545).

With respect to claim 6, the reference is cited as discussed for claim 3. Ficnh '410 further depicts in figure 2 an exchange system comprising valved locks (parts 126-129) and arms (parts 120 and 122) to facilitate removal of substrate assemblies for equipment maintenance (abstract). A controller (part 135) controls hydraulic cylinders (parts 42, 144, 150, and 152), which in turn drive respective arms (parts 120 and 122) (col. 9, lines 18-23; col. 7, lines 25-28), thus a drive system is used. An end effector (part 180) is also seen in figure 2, which is coupled to a transfer arm (part 120). Ficnh '410 states that the arms are capable of movement in both a horizontal direction and vertical direction (col. 7, lines 21-25). However Ficnh '410 is limited in that while it

discusses removing substrate assemblies, and therefore is capable of removing substrates (abstract), along with the invention being used for the fabrication of electronic components and circuits (col. 1, lines 15-17), Ficnh '410 does not specifically suggest transferring a substrate between a transfer plate in the transfer system and a substrate holder in the process module.

Mooring '545 teaches a semiconductor processing platform having processing module isolation capabilities via an interlocked control system with valves contained in a vacuum body between each of a plurality of adjacent process and transport modules (abstract). Under control of the system, the valve allows separate operation of the transport module and certain ones of the process modules, while a selected one of the process modules is in either a maintenance state or locked out state for servicing (abstract). Furthermore, Mooring '545 teaches transferring of a wafer from a transport module (part 202) to a process module (part 206) (col. 14, lines 54-67; col. 15, lines 1-9). The substrate must be placed on some platform (i.e. support) inside the process module. Mooring '545 cites the advantage of using separate valves (i.e. isolation capabilities) as avoiding downtime due to a pump cycle needed to bring the transport chamber to the needed vacuum state along with no other operations needing to be performed upon the transport chamber (col. 3, lines 12-19).

It would have been obvious to one of ordinary skill in the art to incorporate a wafer (i.e. substrate) transfer mechanism taught in Mooring '545 into the apparatus of Ficnh '410 in order to gain the advantages of maintaining a vacuum pressure in the

transport chamber (i.e. transfer cask) along with no additional operations needed upon the transport chamber.

With respect to claim 15, the reference is cited as discussed for claim 13. Ficnh '410 further depicts in figure 2 depicts cylindrical plate (i.e. maintenance item) (part 43) mounted in chamber (part 18) near the top of the chamber. Furthermore Ficnh '410 discusses a mounting structure (i.e. arms, parts 120 and 122) for releaseably holding the extractor assembly (part 40) (figure 2). Since the mounting structure holds the extractor assembly, it therefore holds the cylindrical plates as well. The arms are capable of moving horizontally and vertically (col. 7, lines 22-25). However Ficnh '410 is limited in that while it is discussed that this process is used for the fabrication of electronics and circuits (col. 1, lines 16-18), it is not suggested to include a substrate (i.e. wafer) moving mechanism.

Mooring '545 further teaches Mooring '545 teaches a semiconductor processing platform having processing module isolation capabilities via an interlocked control system with valves contained in a vacuum body between each (abstract). Under control of the system, the valve allows separate operation of the transport module and certain ones of the process modules, while a selected one of the process modules is in either a maintenance state or locked out state for servicing (abstract). Furthermore, Mooring '545 teaches transferring of a wafer from a transport module (part 202) to a process module (part 206) (col. 14, lines 54-67; col. 15, lines 1-9). In addition, Mooring '545 states that a robot arm located within the transport module may be employed to retrieve a selected substrate from storage and place it into one of the multiple process modules

(col. 1, lines 26-52). Mooring '545 cites the advantage of using separate valves (i.e. isolation capabilities) as avoiding downtime due to a pump cycle needed to bring the transport chamber to the needed vacuum state along with no other operations needing to be performed upon the transport chamber (col. 3, lines 12-19).

It would have been obvious to one of ordinary skill in the art to incorporate the robot arm for transferring a substrate taught in Mooring '545 for transferring assemblies, and thus maintenance items, of Ficnh '410 in order to gain the advantages of maintaining a vacuum pressure in the transport chamber (i.e. transfer cask) along with no additional operations needed upon the transport chamber.

With respect to claim 16, Ficnh '410 further depicts in figure 2 depicts cylindrical plate (i.e. maintenance item) (part 43) part of an extractor assembly (part 40) which is transferred from process module (part 12) to transfer cask (part 130) via arms (parts 120 and 122). However Ficnh '410 is limited in that while it is discussed that this process is used for the fabrication of electronics and circuits (col. 1, lines 16-18), it is not suggested to include a substrate (i.e. wafer) moving mechanism.

Mooring '545 further teaches a semiconductor processing platform having processing module isolation capabilities via an interlocked control system with valves contained in a vacuum body between each (abstract). Under control of the system, the valve allows separate operation of the transport module and certain ones of the process modules, while a selected one of the process modules is in either a maintenance state or locked out state for servicing (abstract). In addition, Mooring states that a robot arm located within the transport module may be employed to retrieve a selected substrate

from storage and place it into one of the multiple process modules (col. 1, lines 26-52). Mooring '545 cites the advantage of using a robot arm as being able to retrieve a selected substrate from storage and place it into one of the many process modules (col. 1, lines 48-52)

It would have been obvious to one of ordinary skill to include a robot arm for substrate transferring taught in Mooring '545 as an additional for the apparatus of Ficnh '410 in order to gain the advantages of retrieving a selected substrate from storage and placing it into one of the many process modules.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ficnh (US Patent No. 5,085,410) as applied to claim 13 above, and further in view of Gujer et al (US Patent No. 6,958,098).

With respect to claim 14, the reference is cited as discussed for claim 13. However Ficnh '410 is limited in that while it discloses removing extractor assemblies, and therefore cylindrical plates (col. 8, lines 6-20; abstract), via arms (parts 120 and 122), it is not discussed that the maintenance item is a cylindrical ring.

Gujer '098 teaches a semiconductor wafer support with a modular lift-pin assembly (abstract) with a substrate support assembly (part 148) comprising a substrate support (part 150) (figure 1). A lift-arm assembly (part 431) actuates the lift-pin assembly (part 402), which comprises a plurality of wear pads (part 432) disposed on a lift-pin ring (i.e. maintenance item) (part 133) (col. 8, lines 14-19). The lift-pin ring is actuated towards the substrate surface to lift the substrate (part 101) from the support surface (part 712) (col. 8, lines 15-21). Furthermore, Gujer '098 states that the lift pins

are supported on a lifter ring, which is attached to a robotic arm (i.e. wafer transfer arm) (col. 1, lines 31-45). Gujer '098 cites the advantage of this device as the lift-pins not binding together in addition to providing ease of serviceability (col. 1, lines 61-67; col. 2, lines 1-3).

It would have been obvious to one of ordinary skill to use the lift-pin assembly taught in Gujer '098 to remove a substrate assembly (and substrate) of Ficnh '410 in order to gain the advantages of the lift-pins not binding and providing ease of serviceability for the apparatus.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent No. 6,095,741 as being related to the state of the art.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Band whose telephone number is (571) 272-9815. The examiner can normally be reached on Mon-Fri, 8am-4pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

12. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MAB

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SUPERVISORY PATENT EXAMINER